T15 Cross Flow Turbine with DTC-Vario Control System

Development Stage: Commercially available

Cross flow turbine on test bench

Product Description

Our high-efficiency cross-flow turbines (Former SKAT) have been steadily optimized over the last years. entec has established itself as the leader for locally manufactured cross-flow turbines in development cooperation.

The latest research resulted in a further increase in efficiency and drastically improved part load characteristic of our latest turbine generation.

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Product Highlights	
Standard Unit Design Capacity	75 kW
Other sizes currently available	-
Characteristic Dimension	0.30 m
Rotational Axis Orientation	-

Design Working Environment

- ■ Natural waterways
- ■ Water transmission systems
- ☐ Effluent streams
- ☐ Tidal estuaries
- ☐ Near shore ocean
- ☐ Off-shore ocean
- ☐ Deep ocean
- ☐ Other

Product Description continued

Key Benefits of the Entec Crossflow Turbine T14:

- High part-load efficiency
- Reaches 80% peak efficiency (more for larger units)
- Optimised guide vane for minimal operating forces

The DTC-Vario is our latest generation of digital control systems for decentralized power generation. It is successfully implemented in small hydropower plants, but the DTC-Vario is much more than a simple turbine controller. Developed originally for cogeneration plants, the hardware is highly versatile and can be adapted to almost any type of plant.

Compared to conventional systems, significant cost and complexity reduction can be achieved by combining three basic functions using the same hardware: control, protection and metering. Reducing the number of components also means increasing the reliability. Beyond that, it allows for advanced remote control and data tracking features, up to complete network integration of small units in the sense of a virtual production park.

The DTC-Vario is a modular system made of several units. The modern, layered architecture makes a clear distinction between power unit and data processing. Units are also available separately. We also offer oil-hydraulic actuators which perfectly fit our turbines and control system. Turn-key systems (water to wire) in standardized or customized configuration are available.

Product Specifications/Details (Standard Unit)

- **Performance Specifications:**

Category	Minimum	Maximum	Units
Flow range	100	1,200	m^3/sec
Hydraulic head range	4	70	*m*
Power output range	10	300	*kW*
Waterway depth	-	-	*m*
Waterway width	-	-	*m*

- **Efficiency:** Turbine: 80% Total System: 74%
- **Deployment Locations:** Worldwide, mostly in Asia.

Product Specifications/Details (Standard Unit) continued

- **Operating History:**
  - 1976: The prototype of the T1 turbine is developed for local manufacturing in Nepal. Turbines are successfully used for mill operation and village electrification.
  - 1980 - 1996: The T1 is followed by the T3, T7, T8, T12, T13.
  - 1998: Complete re-engineering, based on elaborate testing and improved design of components, results in a new design, the T14 Cross Flow Turbine.
  - 2002: The DTC-Vario control system is developed and the first two units are commissioned in the same year.

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